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ANSWER

The organism is *Acanthamoeba,* one of several free-living soil-and-water amoebae that are nevertheless associated with invasive disease and produce a high mortality in those so afflicted. The primary, and in many cases apparently the sole, portal of entry is intranasal; the amoebae are quite susceptible to blood and gastric juice, yet the nasal passages are free of such factors. Having entered through the nose, the amoebae move along the cribiform plate's extraneural space, possibly growing in the nasal mucus, finally to invade the olfactory bulb and from there go to the cerebrum, cerebellum and meninges to produce a primary meningoencephalitis. Ear and eye disease also occurs with some species, in keeping with the exposure of these anatomical sites to amoeba-infected water. In all cases where death does not occur quickly, lesions become granulomatous. (A related free-living amoeba, *Naegleria fowleri,* is much more neuroinvasive, to the extent that the encephalitis usually progresses too rapidly for such granulomatous changes to occur.)

Acanthamoeba culbertsoni is perhaps most common and is 15 to 45 μm across in its trophozoite form; it can be actively motile, producing acanthopodia, but unlike *Naegleria,* does not possess flagella. The cystic form has a diameter of 10 to 25 μm, with a thick double wall. "Axenic cultures" refers to the growth of these amoeba without accompanying bacteria, a fact of importance since the pathogenicity of many amoebae depends on the presence of bacteria, yet *diagnostically* the characteristics of amoeba are best observed free of bacteria. On the direct microscopic, the amoebae can be seen in freshly drawn spinal fluid or tissue where the organisms are present.

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